he has worked up the entire physical geography of the country inclusive of its conditions in past ages, from the first remarks about the country of the Bituriges in Cæsar down to the present. He thus finds that its natural boundary originated in a region of swamps along its southern border whose condition, even with the improvements of modern times, still shows a marked contrast with the intensely agricultural character of the Berry proper. Politically it changed from a Roman *oppidum* to a mediæval diocese, and a feudal duchy, until it was divided up into "départements" during the Revolution, so that the old name survived only as a "nom de pays." Political and geographical conditions have thus worked hand in hand to produce a geographical unit of well-defined individuality. The name of "contribution" to the geography of this region is very modestly chosen, as hardly any aspect of its physical geography has been left untouched. Its boundaries old and new, its cartography, topography, hydrography, climate, are exhaustively treated. A short analysis of the "noms de pays" current in this region forms the conclusion of the book, which is amply illustrated with plates, diagrams, charts, and tables. M. K. GENTHE.

The Face of the Earth (Das Antlitz der Erde). By Eduard Suess. Translated by H. B. C. Sollas under the direction of W. J. Sollas. Vol. II, pp. vi and 556; Vol. III, pp. vii and 400, Maps, plates and text ill. The Clarendon Press, Oxford, 1906, 1908.*

At last all the English-speaking world has its own version of the whole of Suess's wonderful treatise upon the physiographic geology of the globe, as far as it has appeared in the original German. For many years this work has been familiar to the scientific world in its German form, and its influence has been vastly extended by the masterly version published in French in 1897, 1900 and 1902 by E. de Margerie and a coterie of authoritative collaborators. The French edition brought each volume up to the date of its appearance by supplementing the original with intercalated paragraphs, references and illustrations showing the advance of the rapidly growing science. The English version, however, is an exact translation, paragraph by paragraph, without note or comment or added reference or figure, and therefore shows the state of the science of geology, as it existed just prior to the publication of the German volumes eighteen to twenty-five years ago, without taking into account the vast advances of the intervening period. Although the English version is a mere translation, it has been made by masters of geology as well as of English, and the usually idiomatic language used carries the reader along through the presentation of facts and theories in the charming manner of the original. The clearness of Suess's style pervades the translation, so that the book is adapted to the lay as well as the professional reader and should find extensive circulation. In the rendition of the third volume, Professor Sollas has associated with himself nine English Colonial and American geologists of international reputation, but, to quote from the translator's preface, "The reverence due to a great classic has restrained us in this, as in previous volumes, from taking any liberties with the text, whether by comment or emendation. Our sole aim has been a faithful rendering."

The general public should understand at the outset that the title of this work, "The Face of the Earth," hardly gives an adequate idea of its scope and character. It is not a mere description of the earth's surface; in fact word pictures of scenery are not to be found in it. On the contrary, it is an exhaustive treatise

* Vol. I was reviewed in the Bulletin, Vol. 38, pp. 325–327, 1906.

on dynamic geology, in the effort to account for the relief of the globe, not only at present but also at sundry periods in past geologic time.

In the first volume Suess describes in broad terms, first the movements of the outer crust of the earth, then the character of the existing mountain ranges. Volume II is devoted entirely to the consideration of the sea. As usual, Suess introduces his theme with a concise review of the history of the changes in theory that have taken place. In order to avoid the use of the terms "sinking" and "rising" of the land, because they imply adherence to a particular theory accounting for the changes in the relations of sea and land, the author introduces the expressions "positive displacement of the strand-line" for sinking of the land with consequent advance of the sea, and "negative displacement of the strand-line" for elevation of the land with consequent retreat of the sea. The outlines of the Atlantic and Pacific Oceans are sketched in with broad strokes and then the two oceans are compared and contrasted. Regarding the former Suess says: "The inner sides of folded ranges, jagged rias coasts which indicate the subsidence of mountain chains, fractured margin of horsts and fractured tableland form the diversified boundary of the Atlantic Ocean." Concerning the latter he writes: "With the exception of a part of the coast of Central America in Guatemala, where the bending cordillera of the Antilles has sunk in, the whole border of the Pacific Ocean, wherever it is known in any detail, is formed of mountain chains folded towards the ocean in such a manner that their outer folds either form the boundary of the mainland itself or lie in front of it as peninsular and island chains."

The author then passes on to the consideration of the seas during certain geological periods, and in three illuminating chapters gives a survey of some of the results of researches in stratigraphic geology. Regarding the Paleozoic seas, Suess concludes that "Positive and negative movements alternate simultaneously over regions of such vast extent that they cannot be explained by a bulging or a sagging of the lithosphere on however great a scale." The seas of Mesozoic time are then reconstructed and investigated with the same negative result as to the adequacy of explanation offered by mere subsidence and elevation of the land. Tertiary time was a period of great recession of the ocean, but there seems to be no proof of general change being now in progress. The existing oceans differ as to age. Suess holds that the famous terraces of the fiords of Norway are not conclusive proof of the recent elevation of that coast; on the contrary, the great majority of them are to be regarded as monuments of the retreating ice of the glaciers. Nevertheless, he admits that negative displacement of the strand-line of the peninsula did occur during and after the period of maximum extension of the ice in Norway.

On account of its importance in the history of geological thought, a whole chapter is given to the question of the oscillations of the Temple of Serapis at Pozzuoli. Suess concludes that the famous columns record merely two changes of level due to local conditions in an enormous volcanic crater, which therefore have no general significance. A minute investigation of the Baltic and the North Seas leads to the conclusion that some of the elevated beaches and stranded material there are the result of recent (1872) exceptional storms, and that all may well be explained in the same manner. The explanation is extended to other regions with similar coastal configuration. "The Mediterranean region has so far afforded no proof of a secular continental elevation or subsidence within the historic period." The evidence for the sinking of the east coast of

North America from New Brunswick to South Carolina is considered to be wholly inadequate and the well-known facts are explained in other ways, while attention is called to certain fixed points which are exactly the same as they have been for the past 300 years.

These and many other localities and regions are cited to show that there has been no change in the relative level of sea and land within historic time and that "Measurable changes along the coast are, therefore, apart from various meteoric influences, confined to loss of land through the erosive action of the sea; to gain of land from the deposition of sediment; to sudden local subsidence of large tracts of alluvial land covered with forest or buildings; to local oscillations in the vicinity of volcanoes; and finally, but only in rare cases, to true dislocations affecting the coast, as occurred in Cook Strait in New Zealand in 1856."

Suess rejects as inconclusive the evidence of elevation along the west coast of South America in connection with the famous earthquakes of the first half of the Nineteenth century.

The first half of the third volume, which is all that has yet appeared in German, is devoted principally to the mountain ranges, ancient and modern, of Asia. The importance of the Siberian plain is brought out as being the region in which several of the old mountain systems have died out and become buried. The trend-lines of the great mountain systems are seen to describe vast and harmonious arcs indicating a common vertex in the interior of the continent. In the words of our author, "This common vertex is situated close to a crescentic fracture which surrounds the region of Irkutsk like an amphitheatre. Near the eastern border of this amphitheatre lies Lake Baikal." This vertex is called the pre-Cambrian vertex. Another and more recent vertex, the Altai, lies to the southward, while there is a great series of marginal arcs still farther south. With this as his thesis, Suess gives a connected general idea of the eastern part of Eurasia which is inspiring to the geologist, whether later invetigations shall prove its every detail correct or not.

The last two chapters of this part of Volume III are devoted to Asia Minor and the eastern Mediterranean and the broad zone stretching northward throughout Europe. Here are shown the relations of the Tauride Mountains to the Dinarides and the Carnic Alps, of the Urals to the Caucasus, of central Russia to the surrounding mountains, of Scandinavia to Scotland.

Throughout the whole of Suess's great book, the reader is amazed at the breadth of reading and study displayed and the thoroughness with which all the bewildering mass of data now available has been digested and discriminatingly utilized. One is constantly charmed by the clearness of statement, the cogency of reasoning and the frankness regarding opposing views shown everywhere throughout these volumes. The limitations of present knowledge are carefully indicated. Geographers as well as geologists should possess themselves of this work not only on account of its store of valuable facts and references and its discussions, but also because its careful perusal and study cannot fail to give the reader a broad view of science in general and leave his mind more open than before to the reception of suggestions from every worthy source. E. O. H.

The Story of New Netherland. The Dutch in America. By William Elliot Griffis. xv and 292 pp., 13 Illustrations and Index. Houghton Mifflin Company, Boston and New York, 1909. $1.25.

This is the story of the Dutch settlers in New Netherland and what are now